

REMARKS

Claims 1-24 are pending in this application. For purposes of expedition, base claims 1, 2, 3, 4, 11, 12, 13 and 24 have been amended in several particulars to clearly distinguish over cited prior art, including Sakashita, U.S. Patent No. 6,501,451 and Uehara et al., U.S. Patent No. 6,329,980. Respective dependent claims 5-10 and 14-23 have been amended for purposes of consistency for purposes of consistency in order to place all claims in condition for allowance.

Claims 15 and 17-19 have been conditionally allowed if rewritten in independent form to include all of the limitations of their base claim 13 and any intervening claims. The Examiner's indication of allowability of these claims is noted with appreciation. However, forbearance is respectfully requested pending Applicants' traversal of the outstanding rejection of base claim 13, as amended herein.

Claim 1 has been rejected under 35 U.S.C. §102(e) as being anticipated by Sakashita, U.S. Patent No. 6,501,451 for reasons stated on page 2 of the Office Action (Paper No. 6). While Applicants disagree with the Examiner's characterization of Sakashita '451, base claim 1 has been amended to clearly distinguish over Sakashita '451. For example, base claim 1, as amended, defines a display device for displaying video data comprising:

a display module; and
a correction circuit receiving a gradation signal input of said video data, generating a correction signal for correcting luminance based on a relationship defined by an (N-1)-th frame input gradation signal and an N-th frame input gradation signal of said gradation signal, correcting said N-th frame input gradation signal using said correction signal, and outputting said corrected N-th frame input gradation signal to said display module,

wherein target luminance of said corrected N-th frame input gradation signal overshoots or undershoots luminance of said N-th frame input gradation signal within one frame interval.

As expressly defined in Applicants' base claim 1, the luminance is corrected such that a target luminance of a corrected N-th frame input gradation signal overshoots (if a gradation level of the N-th frame input gradation signal is greater than a gradation level of a (N-1)-th frame input gradation signal) or undershoots (if the gradation level of the N-th frame input gradation signal is less than the gradation level of the (N-1)-th frame input gradation signal) luminance of the N-th frame input gradation signal within one frame interval. For example, as shown in FIG. 4, as described on page 16, lines 6-25 of Applicants' specification, target luminance "c" overshoots luminance "b" of an inputted gradation level signal within one frame interval and target luminance "d" undershoots luminance "a" of an inputted gradation level signal within one frame interval. As a result, the target luminance can advantageously be reached in a short time.

In contrast to Applicants' base claim 1, Sakashita, U.S. Patent No. 6,501,451, discloses a LCD driving device, as shown in FIG. 1, in which a corrected display image signal calculation unit 5 is used to receive a current image signal from a first level detection unit 2 and a one-field delayed image signal from a second level detection unit 4, and then correct the current image signal by using a look-up table based on inputted image signals.

According to Sakashita '451, on column 6, lines 16-33 and FIG. 7, display data corresponding to display luminance of 50% is applied so that the display luminance reaches 30% of the final value of 16.6ms (at the end of one-field period). In other words, the display luminance (which corresponds to the target luminance of

the corrected N-th frame input gradation signal of the present invention) reaches the final value (which corresponds to the luminance of the N-th frame input gradation signal of the present invention) within one-field period (which corresponds to the one frame interval of the present invention).

However, Sakashita '451 does **not** disclose that the display luminance overshoots the final value within one-field period. More importantly, Sakashita '451 does **not** disclose that the target luminance of the corrected N-th frame input gradation signal overshoots or undershoots the luminance of the N-th frame input gradation signal within one frame interval, as expressly defined in Applicants' base claim 1.

The rule under 35 U.S.C. §102 is well settled that anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference. In re Paulsen, 30 F.3d 1475, 31 USPQ2d 1671 (Fed. Cir. 1994); In re Spada, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Cir. 1990). Those elements must either be inherent or disclosed expressly and must be arranged as in the claim. Richardson v. Suzuki Motor Co., 868 F.2d 1226, 9 USPQ2d 1913 (Fed. Cir. 1989); Constant v. Advanced Micro-Devices, Inc., 848 F.2d 1560, 7 USPQ2d 1057 (Fed. Cir. 1988); Verdegall Bros., Inc. v. Union Oil Co., 814 F.2d 628, 2 USPQ2d 1051 (Fed. Cir. 1987). The corollary of that rule is that absence from the reference of any claimed element negates anticipation. Kloster Speedsteel AB v. Crucible Inc., 793 F.2d 1565, 230 USPQ2d 81 (Fed. Cir. 1986).

In view of the foregoing amendments to Applicants' base claim 1, and the failure of Sakashita '451 to disclose or suggest key features of Applicants' base

claim 1, Applicants respectfully submit that base claim 1 is now in condition for allowance.

Separately, claims 1-14, 16 and 20-23 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Uehara et al., U.S. Patent No. 6,329,980, as modified to incorporate selected features of Sakashita, U.S. Patent No. 6,501,451 for reasons stated on pages 3-5 of the Office Action (Paper No. 6). Again, as previously discussed in connection with Applicants' base claim 1, base claims 2, 3, 4, 11, 12 and 13 have been amended in the similar manner, in order to clearly distinguish over Uehara et al., U.S. Patent No. 6,329,980 and Sakashita, U.S. Patent No. 6,501,451.

For example, base claims 2-3 have been amended to further define that "target luminance of said corrected N-th frame input gradation signal overshoots or undershoots luminance of said N-th frame input gradation signal within one frame interval."

Similarly, base claims 4, 11, 12 and 13 have been amended to further define, *inter alia*, that,

"target luminance of said corrected current frame input gradation signal overshoots said luminance of said current frame input gradation signal within one frame interval if said gradation level of said current frame input gradation signal is greater than said gradation level of said preceding frame input gradation signal, or said target luminance of said corrected current frame input gradation signal undershoots said luminance of said current frame input gradation signal within one frame interval if said gradation level of said current frame input gradation signal is less than said gradation level of said preceding frame input gradation signal."

In other words, if said gradation level of said current frame input gradation signal is greater than said gradation level of said preceding frame input gradation signal, the target luminance of said corrected current frame input gradation signal

overshoots said luminance of said current frame input gradation signal within one frame interval; otherwise, target luminance of said corrected current frame input gradation signal undershoots said luminance of said current frame input gradation signal within one frame interval.

In contrast to Applicants' base claims 1, 2, 3, 4, 11, 12 and 13, Uehara '980, as a primary reference, discloses a signal driving circuit for a LCD device, as shown in FIG. 4, in which a video interface circuit 31 includes a signal waveform correcting circuit 10, as shown, for example, in FIG. 5 and FIG. 7, for correcting a signal distortion between the drain driver 36. These circuits add into an original pixel signal a correction signal which has width corresponding to difference between the original pixel signal and a delayed original pixel signal delayed by some dots period, as described on column 9, lines 6-60 and FIGs. 4-6 of Uehara '980. Uehara '980 further discloses that correction is performed more properly by increasing a correction quantity if the delay quantity is great and by reducing the correction quantity if the delay quantity is small, as described on column 9, lines 52-60. However, Uehara '980 does not disclose the original pixel signal is delayed by one frame period to generate the delayed original pixel signal.

While Uehara '980 discloses that adding the correction signal into the original pixel signal, but does not disclose that how the luminance changes according to the corrected original pixel signal. In other words, Uehara '980 does not disclose that the luminance of the corrected original pixel signal overshoots or undershoots the luminance of the original pixel signal and, certainly, does not disclose that the target luminance of the corrected N-th frame input gradation signal overshoots or undershoots the luminance of the N-th frame input gradation signal within one frame

interval, as expressly defined in each of Applicants' base claims 1, 2, 3, 4, 11, 12 and 13.

As a secondary reference, Sakashita '451 does **not** remedy the noted deficiencies of Uehara '980 in order to arrive at Applicants' base claims 1, 2, 3, 4, 11, 12 and 13 for reasons discussed previously.

In view of the foregoing amendments to Applicants' base claims 1, 2, 3, 4, 11, 12 and 13, and noted deficiencies of Uehara '980 and Sakashita '451, Applicants respectfully request that the rejection of claims 1-14, 16 and 20-23 be withdrawn.

Lastly, claim 24 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Uehara et al., U.S. Patent No. 6,329,980, as modified to incorporate selected features of Sakashita, U.S. Patent No. 6,501,451 and Shimonura et al., U.S. Patent No. 5,406,305 for reasons stated on page 5 of the Office Action (Paper No. 6). Again, as previously discussed, base claim 24 has been amended to further define,

wherein said timing control substrate further includes a correction circuit receiving an input gradation signal of video data, generating a correction signal to increase luminance if a post-change gradation level of said input gradation signal is greater than a pre-change gradation level of said input gradation signal or generating a correction signal to reduce luminance if said post-change gradation level of said input gradation signal is less than said pre-change gradation level of said input gradation signal, and correcting said post-change input gradation signal using said correction signal, and wherein target luminance of said corrected post-change input gradation signal overshoots luminance of said post-change input gradation signal within one frame interval if said post-change gradation level of said input gradation signal is greater than said pre-change gradation level of said input gradation signal, or said target luminance of said corrected post-change input gradation signal undershoots luminance of said post-change input gradation signal within one frame interval if said post-change gradation level of said input gradation signal is less than said pre-change gradation level of said input gradation signal.

Since Shimomura '305 is only cited for allegedly disclosing the use of a "backlight", the proposed incorporation of Shimomura '305 and Sakashita '451 into the LDC device of Uehara '980 still does not arrive at Applicants' base claim 24. As a result, Applicants respectfully request that the rejection of Applicants' base claim 24 in view of Uehara '980, Sakashita '451 and Shimonura '305 be withdrawn.

In view of the foregoing amendments, arguments and remarks, all claims are deemed to be allowable and this application is believed to be in condition to be passed to issue. Should any questions remain unresolved, the Examiner is requested to telephone Applicants' attorney at the Washington DC area office at (703) 312-6600.

INTERVIEW:

In the interest of expediting prosecution of the present application, Applicants respectfully request that an Examiner interview be scheduled and conducted. In accordance with such interview request, Applicants respectfully request that the Examiner, after review of the present Amendment, contact the undersigned local Washington, D.C. area attorney at the local Washington, D.C. telephone number (703) 312-6600 for scheduling an Examiner interview, or alternatively, refrain from issuing a further action in the above-identified application as the undersigned attorneys will be telephoning the Examiner shortly after the filing date of this Amendment in order to schedule an Examiner interview. Applicants thank the Examiner in advance for such considerations. In the event that this Amendment, in and of itself, is sufficient to place the application in condition for allowance, no Examiner interview may be necessary.

To the extent necessary, Applicants petition for an extension of time under 37 CFR §1.136. Please charge any shortage of fees due in connection with the filing of this paper, including extension of time fees, to the Deposit Account of Antonelli, Terry, Stout & Kraus, No. 01-2135 (Application No. 501.39837X00), and please credit any excess fees to said deposit account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

By


Hung H. Bui (Reg. No. 40,415)
Attorney for Applicant(s)

HHB:btd

1300 North Seventeenth Street, Suite 1800
Arlington, Virginia 22209
Tel.: (703) 312-6600
Fax: (703) 312-6666